

CLAIMS

What is claimed is:

1. A method of removing a key ring stud assembly comprising a key ring portion and
5 a stud, from a threaded aperture of a gas turbine engine component comprising:
forming a tack weld on the key ring portion of the key ring stud assembly;
welding an extractor to the tack weld;
attaching a puller to the extractor welded to the tack weld;
removing the key ring portion by pulling on the puller, wherein the stud remains
10 in the threaded aperture;
assembling two nuts to the stud; and
removing the stud using a tool without damaging the threaded aperture of the gas
turbine engine component.
- 15 2. The method of claim 1, wherein the gas turbine engine component is a turbine rear
frame.
3. The method of claim 1, wherein filler material used in forming the tack weld is the
same material as the component.
20
4. The method of claim 1, wherein the extractor comprises a bolt, an elongated
threaded portion fit within the bolt and two legs, wherein ends of the legs are welded to
the tack weld.
- 25 5. The method of claim 1, wherein the puller comprises a rod portion, and the
elongated threaded portion of the extractor fits within the rod portion of the puller.
6. The method of claim 1, wherein the tack weld is a two point tack weld on keys of
the key ring portion.
30
7. The method of claim 1, comprising attaching a wrench to a nut secured to the stud
to screw out the stud.

8. A method of removing a key ring stud assembly comprising a key ring portion and a stud, from an aperture of a workpiece comprising:
- 5 forming a tack weld on the key ring portion of the key ring stud assembly;
welding an extractor to the tack weld;
attaching a puller to the extractor welded to the tack weld;
removing the key ring portion by pulling on the puller, wherein the stud remains in the aperture;
assembling two nuts to the stud, wherein a first nut is assembled to the stud and a
10 second nut is secured on the first nut to become fixed and prevent movement of the first nut; and
removing the stud using a wrench without damaging the aperture of the workpiece.
- 15 9. A gas turbine engine component having a key ring stud assembly removed by the method of claim 1.
10. A workpiece having a key ring stud assembly removed by the method of claim 8.
- 20 11. The method of claim 1, wherein welding is conducted using a weld wire.
12. The method of claim 1, further comprising monitoring temperature during the welding.